

810-005, Rev. E

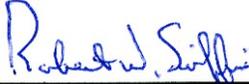
DSMS Telecommunications Link
Design Handbook

901, Rev. C
Handbook Glossary

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Prepared by:

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R. W. Sniffin Date
Editor

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Change Log

Rev	Issue Date	Affected Paragraphs	Change Summary
-	11/30/2000	All	Initial Release
A	8/15/03	2	Corrected units of Boltzmann's constant and other typographical errors. Added abbreviations for new and revised modules.
B	10/7/04	2	Revised abbreviation list for new and revised modules.
C	10/21/05	2	Revised abbreviation list for new and revised modules.

Note to Readers

There are two sets of document histories in the 810-005 document, and these histories are reflected in the header at the top of the page. First, the entire document is periodically released as a revision when major changes affect a majority of the modules. For example, this module is part of 810-005, Revision E. Second, the individual modules also change, starting as an initial issue that has no revision letter. When a module is changed, a change letter is appended to the module number on the second line of the header and a summary of the changes is entered in the module's change log.

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1 Introduction

1.1 Purpose

The purpose of this document is to present a useful glossary of commonly used terms, abbreviations, and acronyms that are current and applicable to the Deep Space Network (DSN) and the Interplanetary Networks Directorate (IPN) of the Jet Propulsion Laboratory.

1.2 Scope

This scope of this document is limited to providing terms, abbreviations, and acronyms that are used within Document 810-005 and especially those that may be different from usage in other organizations.

Terms, abbreviations, and acronyms are included in this document if they meet any of the following criteria:

- used within the DSN or IPN but with a meaning that may be unique to the DSN or IPN,
- used within 810-005 in place of equivalent terms, abbreviations, and acronyms that may be used elsewhere, or
- commonly used in the field of telecommunications engineering but not necessarily known to all users of 810-005.

1.3 Revisions

This glossary will be periodically revised with changes, improvements, or additions. Usually, these revisions will be coincident with the publication of new or revised 810-005 modules that contain new or revised terminology.

1.4 Definitions

The following paragraphs define the types of items that appear in this glossary and give general rules for their formation.

1.4.1 Terms

A *term* is any word or expression that has a precise meaning in a particular field, in this case, telecommunications engineering.

1.4.2 Abbreviations

An *abbreviation* is a shortened or contracted form of a word or phrase. In a strict sense, the letters are individually pronounced (for example, rpm or DSN) or the reader might visualize and pronounce the complete form of the word (for example, "assembly" for "assy" or "telemetry" for "TLM").

1.4.3 Acronyms

An *acronym* is a pronounceable abbreviation formed by one of two methods: (1) combining the first syllables of the key words (for example, Caltech or FORTRAN) or (2) combining the first letter and other letters, as required, from the name or key words of an organization, project, or piece of equipment (for example, AMMOS or LAN).

1.5 Controlling Documents

The terms, abbreviations, and acronyms contained in this document are intended to be consistent with those defined in JPL internal publication, DSMS Requirements and Design – DSMS Terms and Abbreviations; DSMS Document 820-062 that serves as the controlling document for this module

2 *Abbreviations and Terms*

<i>Abbreviation or Term</i>	<i>Definition</i>
A	
A-D	analog-to-digital
A/S	anti-spoofing mode of operation (Global Positioning System) in which the encrypted, or Y-code, is unavailable to civilian users of the system
AFC	automatic frequency control
AFS	atomic frequency standard
AGC	automatic gain control
AIU	Antenna Interface Unit
alidade	The rotating but non-tilting portion of the DSN azimuth-elevation antennas.
AM	amplitude modulation
AMP	amplifier
AMMOS	Advanced Multi-mission Operations System
APID	Application Process Identifier
ARC	ambiguity resolving code
ASM	attached synchronization marker
atm	atmospheric
az or AZ	azimuth
AZ-EL	azimuth-elevation
B	
B2MCD	Block II Maximum Likelihood Convolutional Decoder
B3MCD	Block III Maximum Likelihood Convolutional Decoder
B/W or BW	bandwidth
BCH	Bose-Chaudhuri-Hocquenghem (code)
BER	bit error rate
BET	bit error tolerance
Boltzmann's constant	-198.6 dBm/(Hz · K)

***Abbreviation
or Term***

Definition

BPSK	binary phase shift keyed
BVR	Block V Receiver (part of DTT Subsystem)
BWG	Beam Waveguide (antenna or subnet)
<i>C</i>	
c	speed of light, 299,792.458 km/s
Category A	missions within 2 million km of Earth
Category B	missions at distances greater than 2 million km from Earth
C/A	Coarse Acquisition (GPS code)
CCSDS	Consultative Committee for Space Data Systems
CCW	counter-clockwise
CD	cumulative distribution
CDR	Central Data Recording (assembly)
CDSCC	Canberra (Australia) Deep Space Communications Complex
CFDP	CCSDS file Delivery Protocol
CLTU	Command Link Transfer Unit
CMD	command
CONSCAN	conical scanning
CRC	Cyclic Redundancy Check
CRG	Coherent Reference Generator
cryo	cryogenic
CSO	Cryogenic Sapphire Oscillator (frequency standard)
CSS	Channel-Select Synthesizer
CTT	Compatibility Test Trailer
CV	connection vector
CVCDU	Coded Virtual Channel Data Unit
CW	clockwise
<i>D</i>	
D/C	downconverter
D/L	downlink
dB	decibel(s)

***Abbreviation
or Term***

Definition

dBc	decibel(s) with respect to carrier
dB _i	decibel(s) with respect to isotropic
dB _m	decibel(s) with respect to one milliwatt
DCC	Downlink Channel Controller
DCPC	Downlink Channel Processing Cabinet
DCT	design control table
DDC	Digital Downconverter
dec or DEC	declination
deg	degree(s)
ΔDOR	Delta-Differential One-way Ranging
DIG	digitizer (assembly)
DLT	digital linear tape
DMD	DSS Media Calibration (subsystem) or Data Monitor and Display (assembly)
DN, dn	down
DOR	differential one-way range
DRVID	differenced range versus integrated Doppler
DSCC	Deep Space Communications Complex
DSN	Deep Space Network
DSMS	Deep Space Mission System
DSS	Deep Space Station
DSS-13	34-m research & development antenna at Goldstone DSCC
DSS-14	70-m antenna at Goldstone DSCC
DSS-15	34-m HEF antenna at Goldstone DSCC
DSS-16	26-m antenna at Goldstone DSCC
DSS-23	11-m antenna at Goldstone DSCC
DSS-24	34-m BWG antenna at Goldstone DSCC
DSS-25	34-m BWG antenna at Goldstone DSCC
DSS-26	34-m BWG antenna at Goldstone DSCC
DSS-27	34-m HSB antenna at Goldstone DSCC
DSS-33	11-m antenna at Canberra DSCC
DSS-34	34-m BWG antenna at Canberra DSCC

***Abbreviation
or Term***

Definition

DSS-43	70-m 0antenna at Canberra DSCC
DSS-45	34-m HEF antenna at Canberra DSCC
DSS-46	26-m antenna at Canberra DSCC
DSS-53	11-m antenna at Madrid DSCC
DSS-54	34-m BWG antenna at Madrid DSCC
DSS-55	34-m BWG antenna at Madrid DSCC
DSS-63	70-m antenna at Madrid DSCC
DSS-65	34-m HEF antenna at Madrid DSCC
DSS-66	26-m antenna at Madrid DSCC
DTF	Development and Test Facility
DTK	DSS Tracking (Subsystem)
DTT	Downlink Tracking and Telemetry (Subsystem)

E

EEIS	End-to-End Information System
EIRP	effective isotropic radiated power
el, EL, elev	elevation
EOP	Earth Orientation Parameters (of the International Earth Rotation Service [IERS])

F

F/O	fiber optic
FCD	feedback concatenated decoding
FER	frame error rate
FET	field effect transistor
FFT	fast Fourier transform
FM	frequency modulation
FODA	Fiber-optic Distribution Assembly
FOM	figure of merit
FSTL	Frequency Standards Test Laboratory (at JPL)
FTP, ftp	file transfer protocol
FTS	Frequency and Timing Subsystem

***Abbreviation
or Term***

Definition

G

G/T	(antenna) gain divided by (operating system) temperature
GCF	Ground Communications Facility
GCR	Ground Communications Router
GDS	Ground Data System
GDSCC	Goldstone (California) Deep Space Communications Complex
GMSK	Gaussian minimum-shift keying
GPS	Global Positioning System
GRA	GPS Receiver/Processor Assembly
GSFC	Goddard Spaceflight Center
GSSR	Goldstone Solar System Radar
GSTDN	Ground Spaceflight Tracking and Data Network

H

H/P	high power
HA	hour angle
HEF	high efficiency (antenna)
HEMT	high electron-mobility (field-effect) transistor
HPBW	half-power beamwidth
HRM	high-rate (radio loss) model
HSB	high (angular-tracking) speed beam waveguide (antenna)

I

I/F	interface
ID	identifier or identification
IDC	IF-to-Digital Converter
IERS	International Earth Rotation Service
IF	intermediate frequency
IIRV	Improved Inter-range Vector
INP	internet predicts
IPN	Interplanetary Networks (JPL Directorate)

***Abbreviation
or Term***

Definition

ITRF IERS Terrestrial Reference Frame
ITU International Telecommunications Union

J-K

JPL Jet Propulsion Laboratory
KSC Kennedy Space Center

L

L/P low power
LAN local area network
LCP left (-hand) circular polarization
LITS/VCXO Linear Ion-trap/Voltage Controlled Crystal Oscillator
(frequency standard)
LNA low noise amplifier
LO local oscillator
LRM low-rate (radio loss) model

M

MAP maximum *a posteriori* probability
MASER microwave amplification by stimulated emission of radiation
max maximum
MB medium bandwidth
MCD Maximum Likelihood Convolutional Decoder
MDA Metric Data Assembly
MDSCC Madrid (Spain) Deep Space Communications Complex
ME Master Equatorial
MFR Multi-function Receiver
MGC manual gain control
MILA Merritt Island Launch Area
min minimum
MOC Mission Operations Center
MOCC Mission Operations Control Center

***Abbreviation
or Term***

Definition

mod	modulation, module
MOS	Mission Operations System
MRE	mean radial error
MRT	major range tone
MSL	mean sea level
MSPA	multiple spacecraft per antenna

N

NA, N/A	not applicable
NASA	National Aeronautics and Space Administration
NAV	Navigation (Subsystem)
NB	narrowband, narrow bandwidth
NCO	numerically controlled oscillator
NISN	NASA Integrated Service Network
NIST	National Institute of Standards and Technology
NMC	Network Monitor and Control (Subsystem)
NOAA	National Oceanic and Atmospheric Administration
NOCC	Network Operations Control Center
NRZ	non-return to zero
NRZ-L	non-return to zero, level
NRZ-M	non-return to zero, mark
NRZ-S	non-return to zero, space
NSP	Network Simplification Project
NSS	Network Support Subsystem
NTIA	National Telecommunications and Information Administration
NTK	NOCC Tracking (Subsystem)
NTP	Network Time Protocol

O

OD	Operator Directive
OQPSK	offset quadrature phase-shift keyed
ORT	Operational Readiness Test

***Abbreviation
or Term***

Definition

OVLBI Orbiting Very-long Baseline Interferometry

OVT Operational Verification Test

P

P/O part of

PCG Phase Calibration Generator (part of FTS)

PCM pulse-code modulation

PDF probability density function

PDF portable document format (type or extension of computer file)

PDRVID pseudo-DRVID

PLL phase-locked loop

PM phase modulation

PN pseudo-random noise

POCC Project Operations Control Center

PSK phase-shift keyed

PTS Precision Telemetry Simulator

Q

QPSK quadrature phase-shift keying

QQCL quantity, quality, continuity, and latency

R

R/T real-time, room temperature

RA right ascension

RCP right circular polarization

RE Receiver-Exciter

RER Receiver, Exciter, and Ranging (26-m subnet equipment)

rev revision

RF radio frequency

RH relative humidity

RID RF-to-IF Downconverter

RMDC Radio-Metric Data Conditioner

***Abbreviation
or Term***

Definition

RMS; rms	root-mean-square
RNG	range
RNS	Reliable Network Service
RRP	Receiver and Ranging Processor
RS	Reed-Solomon (code), radio science
RSR	Radio Science Receiver
rss, RSS	root-sum-square
RTL	round-trip light time
RU	range unit
 <i>S</i>	
S/C	spacecraft
S/N	Signal-to-Noise
SBE	S-band Exciter (26-m subnet assembly)
SCA	Subsystem Control and Monitor Assembly
SEP	Sun-Earth-Probe (angle)
SFDU	Standard Formatted Data Unit
SFODA	Stabilized Fiber-optic Distribution Assembly
SFG	Special Function Gateway
SFU	solar flux units (one SFU = 1×10^{-22} W/m ² /Hz)
SLE	Space Link Extension
SNR	signal-to-noise ratio
SPC	Signal Processing Center
SPD	S-Band Polarization Diplexed (feedcone)
SPT	System Performance Test or System Performance Test Assembly
SRA	Sequential Ranging Assembly
STEC	slant total electron content
stowed	With respect to an antenna, aimed near zenith for protection from the wind.
sub, subcarr	subcarrier

***Abbreviation
or Term***

Definition

SYM symbol

SYS system

T

TBD to be determined

TCP Telemetry and Command Processor

TCT Time Code Translator

TDA Tracking and Data Acquisition (former JPL Directorate)

TDDS Tracking and Data Delivery System

TDM Time-division multiplex

TDS Telemetry Delivery Subsystem

TEC total electron content

TIS Telemetry Input Subsystem

TLM telemetry, Telemetry Service

TLP Telemetry Processor

TMOD Tracking and Mission Operations Directorate (JPL)

T_{OP} T sub OP (operating system temperature)

TSA Telemetry Simulation Assembly

TXR transmitter or Transmitter Subsystem

U

U/C upconverter

U/L uplink

ULNA ultra low-noise amplifier

UPA Uplink Processor Assembly

UPL Uplink (Subsystem)

URA Uplink Ranging Assembly

USO Ultra-Stable Oscillator

UTC Universal Time, Coordinated

<i>Abbreviation or Term</i>	<i>Definition</i>
V	
VAC	vacuum
VC	virtual channel
VCDU	Virtual Channel Data Unit
VCO	voltage controlled oscillator
VCXO	voltage-controlled crystal oscillator
VLBI	very-long baseline interferometry
VSR	VLBI Science Receiver
W	
W/B, WB	wideband
WD	waveform distortion
X	
X-EL, XEL	cross-elevation
XMIT	transmit
XRO	X-band receive only (feedcone)
XTR	X-band transmit-receive (feedcone)
Y-Z	
yr	year
ZDD	Zero-delay Device
ZEN	zenith